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IS 12236 (1987): Paper Page Rolls for Adding Machines/Calculators [LITD 7: Audio, Video and Multimedia Systems and Equipment]

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Indian Standard

SPECIFICATION FOR PAPER PAGE ROLLS FOR ADDING MACHINES/CALCULATORS

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NEW DELHI 110002

Gr 2

June 1988

Indian Standard

SPECIFICATION FOR PAPER PAGE ROLLS FOR ADDING MACHINES/CALCULATORS

0. FOREWORD

0.1 This Indian Standard was adopted by the Bureau of Indian Standards on 26 November 1987, after the draft finalized by the Radio Communications Sectional Committee had been approved by the Electronics and Telecommunication Division Council.

0.2 Adding machine roll/calculator roll is a continuous length of plain paper in roll form for use with page type calculator/adding machines. The roll may consist of single ply or more than one ply (for example, two or three) for use with carbon sheet interleaved to give an original and carbon copies.

0.3 The object of this standard is to specify the detail requirements of adding machines/calculators paper page rolls (single, two and three ply). It is anticipated that adoption of this standard will ensure uniformity in production and guide the manufacturers.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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*Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard covers the dimensions and other functional requirements of the adding machines/calculators paper page rolls for use with adding machines, electronic printex calculators and similar machines.

2. TERMINOLOGY

2.1 For the purpose of this standard, the following definition shall apply.

2.1 Adding Machine Roll/Calculator Roll — A continuous length of plain paper in a roll form for use with adding machines, electronic printex calculators and similar machines.

3. MATERIAL AND CONSTRUCTION

3.1 The quality of paper shall conform to the requirements of white printing paper of nominal mass 60 g/m^2 and nominal thickness of 0·09 mm as prescribed in IS : 1848-1981*.

3.2 Carbon Paper (for Use with 2 and 3 Ply Rolls)

a) Base paper — Type A of IS : 9055-1979†

b) Coated paper
  - i) The base paper shall be coated on one side with suitable carbon ink necessary to give the required manifolding characteristics. The coating shall be smooth, uniform and free from smudginess and tendency to separate as flakes, when used.
  - ii) Mass of coating shall be 7 ± 2 g/m^2.
  - iii) Manifolding characteristics (minimum number of legible copies) — 3.
  - iv) Overall width of the carbon paper shall be the same as the width of the printing white paper.

3.3 Adding Machine/Calculator Rolls — The rolls, single, two and three ply, shall be in 1, 2 and 3 continuous layers respectively of printing white paper, in roll form wound on a central core for use with such machines In case of 2 and 3 ply rolls, the printing white paper layers shall be interleaved respectively with 1 and 2 layers of carbon paper with the coated surface of carbon papers facing the central core, in a manner that each layer of carbon paper lies in between 2 layers of printing white paper with a view to obtain one original and 1 and 2 carbon copies respectively.

3.3.1 Each roll of paper shall be of homogenous composition, free from joints, tears, waves, flakes or any other visual defects.

3.4 Construction

3.4.1 *Reeling* — Paper/layers of paper shall be tightly and evenly wound on the central core in a manner that each of the edges of the rolls lies in one plane and also in a manner so that the paper unwinds freely without sticking. The ends of the roll shall be parallel and uniform in diameter. The inner end of the roll of paper shall be secured to the central core by adhesive strip. The outer end of the roll shall also be secured by adhesive strip so that the paper roll does not get unwound.

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*Specification for writing and printing papers.

†Specification for one time carbon paper.

3.4.2 *Central Core* — The central core shall be uniformly made of tubular construction and shall have sufficient strength. The material from which the central core is made shall be pressed paper board, cardboard or any other suitable strong and durable material.

3.5 The rolls may also be made of carbonless type of paper in which backside of the first layer and top side of the second layer for two ply rolls (to continue for rest of the plies) shall be quoted with a colourless chemical quoting such that legible impressions are obtained up to the last copy. The properties of the base paper shall remain the same as specified in **3.1**.

4. DIMENSIONS

4.1 The adding machine/calculator roll shall comply with the dimensions given below:

a) *Paper Roll*

1) Outer diameter	80 ± 1 mm 70 ± 1 mm

NOTE — In special circumstances, the outer diameter may be as agreed to between the manufacturer and the user.

2) Width of the paper/roll	57·5 ± 0·5 mm 44·5 ± 0·5 mm 37·5 ± 0·5 mm

NOTE — In special circumstances, the outer diameter may be as agreed to between the manufacturer and the user.

b) *Central Core*

1) Thickness of the material	2·0 ± 0·5 mm
2) Inner diameter	12·5 ± 0·5 mm
3) Length	Same as the width of the paper

5. MARKING

5.1 The following information shall be marked on each roll of paper in the following order of preference:

a) Outer diameter;

b) Width;

c) No. of plies;

d) Manufacturer's name or designation or trade-mark, if any;

e) Data code; and

NOTE — Reference may be made to IS : 8186-1976*.

f) Any other marking as agreed to between the manufacturer and the purchaser.

5.1.1 Each carton containing the paper roll shall be marked with all information specified in **5.1**, in addition to the following:

a) The description of the contents and the number of rolls contained in the carton, and

b) Country of manufacture.

5.1.2 The calculator/adding machine roll may also be marked with the Standard Mark.

NOTE — The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act 1986 and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

6. PACKING

6.1 Each roll of paper shall be individually wrapped with good quality strong and durable paper label with the adequate marking as specified in **5.1** or as agreed to between the user and the manufacturer.

6.1.1 The rolls shall be packed in three ply corrugated cartons with the following specifications:

a) Thickness of board shall be not less than 2·0 mm including kraft lining,

b) Substance shall be not less than 1·1 kg/m^2, and

c) Bursting strength shall be not less than 2 kg/cm^2 for bursting area 100 cm^2 base.

Each carton shall contain 1, 2 or 3 dozen rolls of paper and shall be sealed with gummed tape made of kraft paper in accordance with relevant Indian Standards.

7. TESTS

7.1 Classification of Tests

7.1.1 *Type Tests* — The following shall constitute type test:

a) Visual examination,

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*Marking codes for values and tolerances of resistors and capacitors.

b) Dimensions,

c) Quality of paper (*see* **3.1**),

d) Quality of carbon paper [*see* **3.2** (a) and (b)], and

e) Climatic tests.

7.1.1.1 *Number of samples* — Five sample rolls of paper of each type shall be supplied for carrying out type tests in accordance with this standard.

7.1.1.2 *Criteria for approval* — There shall be no single failure in any of the tests.

7.1.2 *Acceptance Tests* — The following shall constitute the acceptance tests:

a) Visual examination,

b) Dimensions,

c) Quality of paper (*see* **3.1**), and

d) Climatic tests.

7.1.2.1 A recommended sampling plan and acceptance criteria are given in Appendix A.

7.1.3 *Routine Tests* — The following shall constitute the routine tests and shall be carried out on each and every roll:

a) Visual examination, and

b) Dimensions.

7.2 General Conditions for Tests

7.2.1 The tests shall be carried out under standard atmospheric conditions, that is:

Temperature	27 ± 2°C
Relative humidity	65 ± 2 percent

7.3 Visual Examination — Each paper roll shall be visually examined and checked for relevant requirements specified in this standard.

7.4 Dimensions — The paper roll and the central core shall be checked for the dimensions specified in this standard.

7.5 Climatic Tests — The paper rolls shall be subjected to the climatic tests given in Table 1 in accordance with sequence specified.

7.5.1 At the end of the climatic sequence, the paper rolls shall be subjected to the recovery under standard atmospheric conditions of 27 ± 2°C and 65 ± 2 percent RH for a period of 2 hours.

7.5.2 The samples shall withstand the climatic tests without obvious detriment and shall manifold satisfactorily according to the standard at the end of each of the climatic tests and after recovery. The bleeding of the carbon shall not occur during any of the climatic tests. Oily stains shall not appear on the paper.

8. INFORMATION TO BE SUPPLIED BY THE PURCHASER

8.1 The purchaser shall supply the following information while ordering for adding machine/calculator rolls:

a) Number of ply 1, 2 and 3;

b) Packing rolls;

c) Dimensions of the paper roll and central core; and

d) Carbon interleaved or carbonless type.

TABLE 1 CLIMATIC TESTS

(*Clause* 7.5)

SL NO.	TESTS	SEVERITY	REFERENCE TO IS NO.
i)	Dry heat	+55°C for 16 h	Section 3 of IS : 9000 (Part 3)-1977*
ii)	Damp heat cyclic (1st cycle)	+55°C at 95 percent RH	Section 2 of IS : 9000 (Part 5)-1981†
iii)	Cold	−25°C for 2 h	Section 3 of IS : 9000 (Part 2)-1977‡
iv)	Damp heat cyclic	Number of remaining cycles one +55°C at 95 percent RH	Section 2 of IS : 9000 (Part 5)-1981†

Basic environmental testing procedures for electronic and electrical items: *Part 3 Dry heat test, Section 3 Dry heat test for non-heat dissipating items with gradual change of temperature.

Basic environmental testing procedures for electronic and electrical items: †Part 5 Damp heat (cyclic) test, Section 2 12 + 12 h cycle.

Basic environmental testing procedures for electronic and electrical items: ‡Part 2 Cold test, Section 3 Cold test for non-heat dissipating items with gradual change of temperature.

APPENDIX A

(*Clause* 7.1.2.1)

SAMPLING AND CRITERIA FOR CONFORMITY

A-0. LOT

A-0.1 In any consignment, all the paper rolls of the same type manufactured by the same factory during the same period, using the same process and materials shall constitute a lot.

A-0.2 Samples shall be taken from each lot and tested for acceptance tests.

A-1. SCALE OF SAMPLING

A-1.1 The number of page rolls to be selected shall be in accordance with col 1 and 2 of Table 2.

A-1.1.1 The page rolls shall be selected at random from each lot. For this purpose, provisions for random sampling as given in IS : 4905-1968* may be followed.

A-2. NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

A-2.1 The paper rolls selected as specified in col 1 and 2 of Table 2 shall be subjected to acceptance test (*see* **7.1.1.2**). If a sample roll fails in any one of the acceptance tests, it shall be called a defective. If the number of defective rolls is found to be equal or less than the corresponding permissible number of defectives (*a*) specified in col 3, the lot shall be considered as conforming to the acceptance tests; otherwise it shall be rejected.

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*Methods for random sampling.

TABLE 2 SCALE OF SAMPLING AND PERMISSIBLE NUMBER OF DEFECTIVES

LOT SIZE (*N*)	SAMPLE SIZE (*n*)	PERMISSIBLE NUMBER OF DEFECTIVES (*a*)
Up to 50	3	0
51 to 150	5	0
151 to 300	8	0
301 to 500	13	1
501 to 1 000	20	2
1 001 and above	32	3